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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,698	03/19/2004	B. Ryland Wiggs	N9302	9146

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NASHVILLE, TN 37203

EXAMINER	
NALVEN, EMILY IRIS	
ART UNIT	**PAPER NUMBER**
3744	

MAIL DATE	DELIVERY MODE
10/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/804,698	WIGGS, B. RYLAND	
	Examiner	Art Unit	
	Emily I. Nalven	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *21 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-76* is/are pending in the application.

4a) Of the above claim(s) *1-12,18-45 and 51-76* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *13-17 and 46-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Receipt of applicant's amendment filed on March 30, 2007 is acknowledged.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 13-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster (US 6,354,097) in view of Wiggs (US 5,946,928). Schuster teaches the elements of the present invention as described above, but fails to teach a direct expansion geothermal heat exchange system. Wiggs teaches a direct expansion geothermal heat exchange system (Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the refrigerant and working pressures of Schuster with the heat exchange system of Wiggs since the refrigerant advantageously assists in effecting heat transfer (col. 1, lines 26-29).

4. **Claim 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster (US 6,354,097) in view of Wiggs (US 5,946,928) in further view of Komatsubara et al. (US 2002/0194862). Schuster and Wiggs teach the elements of the present invention as described above, but fail to teach providing polyol ester lubricating oil for the system's compressor. Komatsubara et al. explicitly teach providing polyol ester lubricating oil for a system's compressor (paragraph 0037). It would have been

obvious to one of ordinary skill in the art at the time of the invention was made to combine the refrigeration system and working pressures of Schuster and Wiggs with the lubricating oil of Komatsubara et al. since polyol ester is an environmentally safe lubricating oil that would prevent seizing of the system compressor.

5. **Claims 46-48** are rejected are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster (US 6,354,097) in view of Wiggs (US 5,946,928). Schuster explicitly teaches the method and apparatus of providing a refrigerant with system operational working pressures at least 33% greater than the system operational working pressures of R-22 (col. 1, lines 21-32), a system components designed to withstand greater system operational working pressures (col. 4, lines 23-28), and a system providing an R-410A refrigerant (col. 4 lines 23-28) but fails to teach a direct expansion geothermal heat exchange system. Wiggs teaches a direct expansion geothermal heat exchange system (Figure 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the refrigerant and working pressures of Schuster with the heat exchange system of Wiggs since the refrigerant advantageously assists in effecting heat transfer (col. 1, lines 26-29).

It should be noted that the phrase "a direct expansion geothermal heat exchange system" of claim 46, is part of the preamble and does not significantly add to the meets and bounds of the claim and is therefore given limited patentable weight.

6. **Claim 49** is rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster (US 6,354,097) in view of Komatsubara et al. (US 2002/0194862). Schuster

teaches the elements of the present invention as described above, but fails to teach providing polyol ester lubricating oil for the system's compressor. Komatsubara et al. explicitly teach providing polyol ester lubricating oil for a system's compressor (paragraph 0037). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the refrigeration system and working pressures of Shuster with the lubricating oil of Komatsubara et al. since polyol ester is an environmentally safe lubricating oil that would prevent seizing of the system compressor.

7. **Claim 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster (US 6,354,097) in view of Wiggs (US 5,946,928) and in further view of Smolinsky (US 6,227,003). Schuster and Wiggs explicitly teaches the elements of the present invention as described above, but fails to teach a filter dryer. Smolinsky explicitly teaches a filter dryer (60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the refrigeration system and working pressures of Schuster and Wiggs with the filter dryer of Smolinky since a filter dryer advantageously removes moisture and contaminants from refrigeration systems (col. 5, line 44).

Regarding the phrase "oversized by a factor of at least 10% above the size of filter dryer used in an R-22 based system" of lines 2-3, it would have been obvious to provide a larger filter dryer since the system is operating under increased working pressures and system components must be adapted to accommodate this.

8. **Claims 50** is rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster (US 6,354,097) in view of Smolinsky (US 6,227,003). Schuster explicitly teaches the elements of the present invention as described above, but fails to teach a filter dryer. Smolinsky explicitly teaches a filter dryer (60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the refrigeration system and working pressures of Schuster with the filter dryer of Smolinsky since a filter dryer advantageously removes moisture and contaminants from refrigeration systems (col. 5, line 44).

Regarding the phrase "oversized by a factor of at least 10% above the size of filter dryer used in an R-22 based system" of lines 2-3, it would have been obvious to provide a larger filter dryer since the system is operating under increased working pressures and system components must be adapted to accommodate this.

Response to Arguments

9. The applicant contends that a system's operational working pressure is not indefinite language. The examiner Applicant's arguments, see remarks page 5-6, filed 3/30/07, with respect to the 112 second paragraph objection of the indefiniteness of the language "system operational working pressures" has been withdrawn.

The applicant also contends that standard filter designs for R-22 systems are well known in the art and "oversized by a factor of at least 10% above the size of a filter dryer" is not indefinite language. The examiner Applicant's arguments, see remarks page 5-6, filed 3/30/07, with respect to the 112 second paragraph objection of the

indefiniteness of the language ""oversized by a factor of at least 10% above the size of a filter dryer" has been withdrawn.

The applicant also contends that Schuster only refers to high-pressure situations wherein the operating pressures of the R-22 refrigerant be up to 70% higher than normal. However, the claim language does not preclude that the heat exchange system from working a portion of the time at high pressure and that the entire system must continuously be operating at standard pressure. If there is a malfunction in the system and the pressure increases, broadly defined the system is still working and operating in these high-pressure situations. Regardless of the rationale for Schuster's teaching, Schuster structurally teaches a system that broadly meets the limitations of the system as claimed by the applicant.

The applicant contends that Schuster does not teach an air-source heating/cooling system with a refrigerant with higher operating pressure than R-22. However, Schuster indeed teaches using R-410A with operating pressures up to 70% higher than R-22 (col 1 lines 28-31). Therefore it is disclosed that the R-410A is known to be used in air conditioners and heat pumps. The rationale that using R-410A as taught by Schuster in the system as taught by Wiggs to advantageously assist heat transfer is valid as this refrigerant is used over R-22 because it does not contribute to ozone depletion and has higher operating pressures over R-22 which allows for a greater amount of heat transfer to occur in the system.

The applicant contends that the purpose of Schuster's invention is to design around the potential use of a refrigerant with higher operating pressures than R-22.

However, regardless of the purpose of the invention, Schuster discloses the structure as claimed by the applicant and discloses that it is known to use R-410 which has higher operating pressures than R-22 in an air conditioning system.

The applicant contends that Schuster does not teach using R-410A in a DX system. However Schuster teaches the phasing out of R-22 as a refrigerant in general because of its negative environmental impact and the use of R-410A as a refrigerant because it does not deplete the ozone (col 1 lines 21-31). Additionally, R-22 are being phased out worldwide and no longer used because of their impact toward global warming. Therefore, Schuster implicitly contends that R-410A is the refrigerant to be used in all systems over R-22 because it has higher operational pressures and is better for the environment.

The applicant contends that Wiggs does not teach using R-22 as a refrigerant in a DX system. However, Schuster stresses the importance of R-410A with the higher operational pressures and better impact for the environment in air conditioning systems (col 1 lines 21-31) in addition to the fact that the use of R-22 as a refrigerant has been phased out. Therefore it would be obvious to one of ordinary skill to use R-410A in place of R-22 in a refrigeration system such as a DX system.

The applicant also contends that Schuster teaches an air-source system not a DX system. However, Wiggs discloses a DX system. The amendments to the claims 13 and 46 have now changed the scope of the rejection to a 103(a) combining the references of Wiggs and Schuster which disclose a DX system and using R-410A as a refrigerant.

The applicant also contends that it is not obvious to combine Komatsubara's teaching of polyol ester with Wiggs DX system. However, Komatsubara teaches using synthetic oils such as polyol ester as a refrigerating device oil suitable to be used in refrigeration system (see para 37 and 38). Therefore it would have been obvious to one of ordinary skill in the art to combine the Komatsubara, Wiggs and Schuster inventions as they all pertain to improving refrigeration systems. Regardless of the fact that R-410A is not explicitly mentioned in the Komatsubara patent, it is taught to be used as a refrigerating oil in a refrigerating device, therefore it is implicit that any suitable type of refrigerant can be used and need not explicitly cite R-410A.

Although Komatsubara teaches that the invention is designed for the provision of an odorant to flammable refrigerants the compressor oil and the flammability of the refrigerant are immaterial. Whether or not the refrigerant is flammable has no bearing on the type of oil being used to operate and lubricate the compressor.

The applicant also claims that combining the use and purpose of a filter dryer is not unique to the Smolinsky patent and is well known in the art. Additionally, applicant claims it was not previously taught to use a filter dryer in an R-410A, DX system. However, simply combining known refrigerants and systems with a larger filter dryer is not patentable subject matter. It can be inferred that the larger the filter dryer the higher the probability of trapping unwanted particles and removing moisture and it is known in the art that R-410A has certain properties that make it useful for a DX system in addition to the fact that it is well known to place a filter dryer in a refrigeration system to improve the overall efficiency of the system. The applicant claims the tubing of the Smolinsky

system would incur costs, however although the initial costs of a filter dryer system would be increased, there would be cost savings in regard to the efficiency of the system over time and be better for the environment, which is one of the previously stated purposed of the R-410A refrigerant as well.

Conclusion

14. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emily Iris Nalven whose telephone number is 571-272-3045. The examiner can normally be reached on Monday - Thursday 8 AM - 5:30 PM and on alternate Fridays 8 AM – 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisors, Cheryl J. Tyler can be reached on 571-272-4834 or Frantz Jules can be

reached on 571-272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Emily Iris Nalven
Art Unit 3744
August 3, 2007

FRANTZ JULES
SUPERVISORY PATENT EXAMINER